

**SYSTEM AND METHOD FOR SUBCARRIER MODULATION AS
SUPERVISORY CHANNEL**

ABSTRACT OF THE DISCLOSURE

An apparatus and method for processing a supervisory signal for optical network applications. The apparatus includes a subcarrier transmission system configured to receive a first supervisory signal and output a second supervisory signal, and an electrical-to-optical conversion system configured to receive the second supervisory signal and a first data signal and output a first optical signal. Additionally, the apparatus includes an optical-to-electrical conversion system configured to receive the first optical signal and output a first electrical signal and a second data signal, and a subcarrier reception system configured to receive the first electrical signal and output a third supervisory signal. The second supervisory signal is associated with a first subcarrier frequency. The first data signal is associated with a first data bandwidth, and the first data bandwidth includes a first data frequency. A ratio of the first subcarrier frequency to the first data frequency ranges from 0.8 to 1.

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